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ABSTRACT

Part of an overall evaluation study of the WANDAH Project at Logan High School (Utah), this study compared the time on task of students in a computer-based English class in two conditions, the handwriting condition (any situation in which they were not involved with computers) and the computer condition. Observational techniques were used to code data under specified timed structures and the results of the six observation periods were analyzed statistically to determine any significant differences. It was found that: (1) students in the computer condition were more often on task (95.1% of the time) than in the handwriting condition (58% of the time); (2) teachers tended to be more involved with students who were using computers; and (3) time on task was affected by the computer location, traffic patterns in the computer writing laboratory, and line of sight from students to teachers. Recommendations for future studies conclude the report and the results of the statistical analysis are displayed in a graph. (RP)

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Time on Task Analysis of the Logan High School Wandah Project

Final Report

A n evaluation sub-report
of

*"Evaluation of the Wandah Project:
A Method for Imporving Productivity"*

By
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Submitted to:
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March, 1986

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TIME ON TASK ANALYSIS OF WANDAH II

Introduction

"Time on Task" is the actual time spent by a student in the completion of a given task. It is the sum of total time in class, minus the time wasted in non- task activities.

In measuring "Time on Task", a student is considered on task, if any of the following criteria are met:

1. A Student is looking at the object in question.
2. A Student is manipulating objects related to the task.
3. A Student is asking a teacher/aide for help.
4. A student is conferring with another student on the task at hand. (This must become and evaluators judgment decision.)

Though there is a chance that "Time on Task" judgments could create errors in the gathering of data, the unobservable measures of "Time on Task" tend to average out those judgment errors.

Glenn Latham has stated the following on measuring time on task.

> "It is true that a student could be exhibiting a behavior that would suggest that he/she is on task, when in fact quite the opposite is the case. For example, a student might be looking intently at a book or work sheet, but be thinking about something that is totally unrelated. And, of course, the opposite is also likely; a student might appear to be staring aimlessly out the window, when in fact he/she is totally lost in thought related to the assigned task. When taking data, we can only assume that these two contrasting phenomenon occur randomly and equally; thus one cancels out the other. When measuring human behavior, we can only record what we can observe." (Latham, Manuscript:Jan. 1986)

When measuring time on task, it is important to qualify any assumptions that may be made. Due to judgments in data collection, one must not make absolute interpretations from the data even though the data may allude to a conclusion. It should also be pointed out that a simple "Time on Task" study can make no statement on time of academic engagement. And finally, that data collected only apply to the time frame being studied, and can not be generalized to other time units.

From "Time on Task" studies, a topography can be created of what is happening in a given situation, and can become a viable strategy in the triangulation process of an evaluation study.

Purpose

The "Time on Task" study is a part of an overall evaluation study of the WANDAH Project at Logan High school. The study is being completed by Wasatch Institute for Research and Evaluation (WIRE). The model includes various evaluation strategies including case studies and "Time on Task."

It is the purpose of this part of the study to compare the "Time on Task" of students in two conditions; the "Handwriting Condition" and the "Computer Condition." The handwriting condition is defined as any situation when students are not involved with computers. The computer condition concentrates on all computer related activities.

If all things are equal, it would be assumed that students would be on task at the same level in either conditions. Through

this study, measurement of these conditions will be made.

Evaluation Plan

The plan involved two observers coding time use behavior, and one person performing validity checks. The observers recorded "off task" behavior because students are "on task" more then they are "off task"; consequently, recording "off task" behavior eased the gathering and coding of data. "Time on task" was then figured by taking the total measured time, and subtracting the "off task" time.

A time sampling by interval strategy was used to measure students. The interval was every thirty seconds, and upwards to one minute if many behaviors had to be coded.

The writing lab was divided in half, and each observer would view half of the students (See figure 1). At the conclusion of an observation period of 20 minutes, the observers would switch halves, and observe for another 20 minutes. The total observations became the 'n' for the study, and used in performing the standard t-test for significance.

The plan included six observation periods, the first two in early December at the beginning of the trimester, and the last four in February towards the end of the trimester.

Finally, statistical analysis of the two conditions was performed to measure statistical significance.

Description of setting_____

Date_____Time_____

Observer_____

FIGURE #1

Method

A video recording was made of the computer/writing lab and used for observation training. The observers then attended a training session where the evaluation plan was explained. The observers then were tested for inter-rater reliability, and prepared for the first observation.

The first observation was carried out as planned, with Dr. Latham doing validity checks of the observers. Observers attempted to follow students throughout the class to get interval timings at both writing and computer conditions. This procedure was followed for the first two observations.

After the first two observations, the evaluation team changed its observation strategy by gathering data by student station rather then by individual students. This change was motivated due to difficulty in following students through out the computer writing lab.

All other observations were carried out by using the station observation strategy. The results of the observations, with statistical analysis, is shown in figure 2.

In collecting data, the first three observations were performed throughout the class period. The fourth observation was completed during the middle of the period, while the fifth observation was done at the end of the class. The sixth observation centered on the beginning of class, and came towards the end of a major student project.

Two assumptions in coding were made. First, if a student had

Logan High School Project Analysis
Time on Task
9th Grade Students

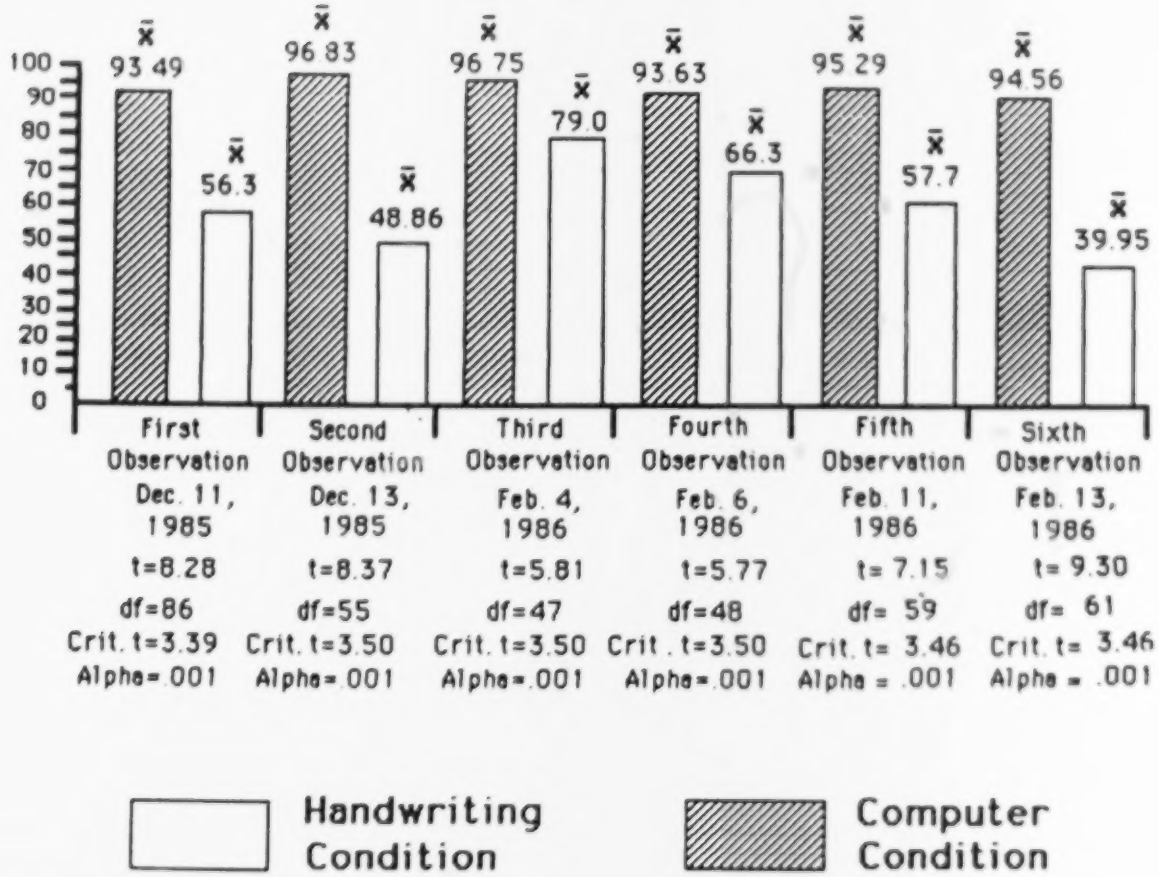

FIGURE #2

his hand raised, waiting for teacher help during an interval, they were coded as off task. Secondly, students that were reading were counted as on task, due to the program's modeling program.

The analysis was performed, and in each case, there was evidence of statistical significance. The average "Time on Task" at the computers were 95.09% while the handwriting condition had an average of 58%.

Observations

During the evaluation study, there were some observations that should be made, some of which suggest the need for further studies, including validity studies.

(1). It was observed that there were more students then computers. Students that had completed handwriting work at the tables, and had to wait for an open computer, tended to be off task more then on task. In future studies, there should be a strategy to measure those that are waiting for computers, from those that are just off task.

(2). Teachers appeared to be more involved with computer questions then writing questions in the early stages of the study, but this trend slowly changed throughout the study. There were two teachers in the lab plus one adult aide and one student aide. The numbers of teachers and aides increased the probing at computers. These people could have constituted a confounding variable.

In future studies, teacher interactions with students should

be considered, and measurement of student/teacher interactions in relation to students in a computer condition compared to those in a writing condition should be studied.

(3). Teachers appeared to spend more time with students at computers then they did with students at tables. The observers viewed a tendency for teachers to quickly deal with questions of students at computers before attending to students in the handwriting condition. Students at computers appeared to be probed by teachers when they showed signs of off task behavior more frequently then they did students who were composing with paper and pencil.

(4). Students were lost from the study that left the writing lab and went into the classroom. The amount of time that they spent on or off task was not measured. In fact, there is no indication of what they did. This needs to be studied more carefully.

(5). Time on task seemed to be affected by computer location, traffic patterns, and line of sight of students to teachers.

(6). During the observations, there were many students that were never observed in both conditions. Also, several students were on task, but were doing classwork not related to that class period. Future studies of actual academic engagement should be conducted.

Recommendations

A more precise measure must be developed in terms of monitoring teacher engagement with students by coding questions asked by students as well as the responses of teachers. Such a study would provide more accurate data on academic engagement and time on task.

In subsequent studies, a validity check of the time on task should be made by performing duration studies of randomly selected students throughout an entire 70 minute class period. This would more accurately show actual time on task in both conditions.

Another concern for future study is the possible use of two treatment groups, one completely in the handwriting condition, and one totally in the computer condition. The availability or lack of availability of a computer seemed to become a confounding variable in the on task behavior.

Finally, a study to use electronic media to record students activities on the computer would provide first hand insight to student computer interactions. This study could further validate time on task, but in addition allow an indepth coding of student activity or behavior. Through this electronic collection technique, computer related teacher interactions could be recorded and then analyzed.

Conclusions

Though the absolute accuracy of the data could be rightfully challenged, they do present what the observers see as a basically

accurate characterization of the use of time by students.

Data from other studies performed by members of the evaluation team tend to support the contention that students on computers tend to average 95 % on task and students in a paper and pencil condition average 55-60%. The data from these observations fall within those ranges: 95.1% and 58% respectively.